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सूक्ष्म संसाधित्रों से संबंधित शब्दावली

Indian Standard

TERMINOLOGY RELATED TO MICROPROCESSORS

UDC 681·31·012 : 001·4

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

September 1992 **Price Group 2**

Semiconductor Devices and Integrated Circuits Sectional Committee, LT 10

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Semiconductor Devices and Integrated Circuits Sectional Committee had been approved by the Electronics and Telecommunication Division Council.

This standard gives terms and definitions applicable to microprocessor systems.

While preparing this standard, assistance has been derived from IEC Pub 824 'Terminology related to microprocessors' issued by the International Electrotechnical Commission (IEC).

Indian Standard

TERMINOLOGY RELATED TO MICROPROCESSORS

1 SCOPE

This standard gives terms and definitions applicable to microprocessor systems.

2 TERMS AND DEFINITIONS

2.1 Architecture

2.1.1 *Bus*

A common path along which signals travel from one of several destinations.

2.1.2 *Arithmetic* [*Logic*] [*Arithmetic and Logic*] *Unit, ALU* (*abbreviation*)

In a processor the part that performs arithmetic operations [logic operations], [arithmetic operations and logic operations].

NOTE — The term 'arithmetic unit' is sometimes used for a unit that performs both arithmetic and logic operations.

2.1.3 (*Instruction*) *Control Unit*

In a processor, the part that retrieves instructions in proper sequence, interprets each instruction, and applies the proper signals to the arithmetic and logic unit and other parts in accordance with this interpretation.

2.1.4 *Program Counter*

A special purpose register used to hold the address of the next instruction to be executed.

2.1.5 *Register*

A part of internal storage having a specified storage capacity and usually intended for a specific purpose.

> "An arrangement of bistable circuits by means of which information may be accepted stored and retrieved.

NOTE — The register may form part of another memory and is of a specified capacity."

2.1.6 *Register Length*

The storage capacity of a register.

2.1.7 *General Purpose Register*

A register, usually explicitly addressable, within a set of registers, that can be used for different purposes, such as an accumulator, an index register, or a special handler of data.

2.1.8 *Address Register*

Register that is used to hold an address.

2.1.9 *Base Address*

A numeric value that is used as a reference in the calculation of addresses in the execution of a computer program.

2.1.10 *Base* (*Address*) *Register*

A register that holds a base address.

2.1.11 *Read/Write Register*

Register that is used to hold data received from or to be transmitted to the bus.

2.1.12 *Instruction Register*

A register that is used to hold an instruction for interpretation.

2.1.13 *Accumulator*

A register in which one operand of an operation can be stored and subsequently replaced by the result of an operation.

2.1.14 *Index Register*

A register whose contents can be used to modify an operand address during the execution of computer instructions.

NOTE — An index register may be used as a counter to control the execution of a loop, to control the use of an array, for table look-up, as a switch, or as a pointer.

2.1.15 *Indicator*

An item of data that may be interrogated to determine whether a particular condition has been satisfied in the execution of a computer program.

Examples : A switch indicator; an overflow indicator.

2.1.16 *Condition Code Register, Indicator Register*

A register containing the indicators that result from the operation of the arithmetic and logic unit.

NOTE — The register may also contain other indicators.

2.1.17 *Status (of a Central Processing Unit)*

One or more data bits showing which one of a class of operations is being performed, has been completed or is recognized by the central processing unit.

2.1.18 *Status Register*

A register containing one or more status bits.

2.1.19 *Pushdown Storage, Stack (Storage)*

A storage device in which data are ordered in such a way that the next data element to be retrieved is the most recently stored.

NOTE — The method is characterized by 'last-in-first-out' (LIFO).

2.1.20 *Stack Pointer, Stack Indicator*

The address of the storage location holding the item of data most recently stored in a pushdown storage.

Remark : This term is frequently used to refer to the stack pointer register.

2.1.21 *Bit Slice Processor*

A central processing unit constructed of an array of identical units, each of which operates simultaneously upon one or more adjacent bits.

2.2 Operation

2.2.1 *Hold (Input) Signal*

A signal that causes a central processing unit to stop its activity and to relinquish control over the bus until the signal is removed.

2.2.2 *Ready Signal*

Signal from a device to indicate to another device:

- that it is ready to send or receive data, or
- that the data transfer has been completed.

2.2.3 *Wait Signal*

A signal indicating that the device addressed by the central processing unit has not yet completed its data transfer.

2.2.4 *To Reset (a Counter)*

To cause a counter to take the state corresponding to a specified initial number.

2.2.5 *Machine Cycle*

The sequence of operations in a central processing unit that corresponds to one memory cycle, input/output (I/O) cycle or equivalent internal operation.

NOTE — An instruction may require one or more machine cycles for its execution and a machine cycle usually contains more than one clock cycle.

2.2.6 *Clock Cycle*

The time period, generally derived from an oscillator, that is used for sequencing data flow and synchronizing one or more functions.

2.2.7 *Anticipatory Fetching, Pre-Fetching*

A procedure in which stored instructions are read from memory by the central processing unit prior to the moment of need.

2.2.8 *Cascaded Carry*

In parallel addition, a procedure in which the addition results in a partial sum numeral and a carry numeral which are in turn added; this process is repeated until a zero carry is generated.

2.2.9 *High-Speed Carry*

In parallel addition, any procedure for speeding up the processing of carries.

Example : Standing-on-nines carry.

2.2.10 *Look-Ahead Carry*

A high-speed carry procedure in which a group of carry digits is formed in parallel from the respective input bits of the two groups that are to be added and, if it exists, from the most significant carry digit that is previous to those groups.

2.2.11 *Memory Segment*

A block of memory that is identified by a base address and has been allocated for a specific purpose.

NOTE — In common usage different portions of memory may be designated as, for example, data segment, stack segment.

2.2.12 *Segment*

A self-contained portion of a computer program that may be executed without the entire computer program necessarily being maintained in the internal storage at any one time.

NOTE — The term 'memory' is frequently used for 'storage'.

2.2.13 *Interrupt, Interruption*

A suspension of a process, such as the execution of a computer program, caused by an event external to that process, and performed in such a way that the process can be resumed.

2.2.14 *Interrupt Vector*

An address held in a special purpose register or in memory that indicates the instruction to be executed on acceptance of the associated interrupt.

NOTE — The term 'interrupt vector' has also been used to describe an array of interrupt vectors that may be indexed.

2.2.15 *Bus Arbitration*

A procedure that resolves priorities among units contending for control of a common bus and that passes control to the selected unit.

2.2.16 *Co-processor*

A processing unit that extends the capabilities of its main processor, directly accesses the memory of that processor, and does not operate autonomously.

2.2.17 *Multiprocessor*

A computer including two or more central processors that have common access to a main storage.

NOTE — The term 'memory' is frequently used for 'storage'.

2.3 Programming

2.3.1 *Microprogram*

A sequence of elementary instructions that corresponds to a specific computer operation, that is maintained in special storage, and whose execution is initiated by the introduction of a computer instruction into an instruction register of a computer.

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